REPORT

to the

HONORABLE BOARD OF DIRECTORS

of the

SANTA CLARA VALLEY WATER CONSERVATION DISTRICT

on

SAN JOSE SEWAGE AS A SOURCE OF WATER SUPPLY

PROJECT REPORT NO. 3

December 31, 1931.

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December 31, 1931.
310 Sansome St.,
San Francisco, California.

SUBJECT: S.C.V.W.C.D.--SAN JOSE SEWAGE AS A SOURCE OF WATER SUPPLY

PROJECT REPORT NO. 3.

The Honorable Board of Directors,
Santa Clara Valley Water Conservation District,
95 Auzerais Bldg.,
San Jose, California.

Gentlemen:

As instructed by your Honorable Board of Directors at the meeting of December 1, 1931, I have investigated the possibilities of securing a primary source of water supply by treatment of sewage, particularly from the City of San Jose.

This is a general subject on which I can claim considerable familiarity, having designed and installed sewage disposal works in which the effluent was used for agricultural purposes for:

City of Tulare	- Septic tanks and sewage farm
City of Santa Maria	- Imhoff tanks and sewage farm
City of Longmont	- Imhoff tanks and sewage farm
Town of Pleasanton	- Septic tanks, intermittent filter and sewage farm.
City of Oroville	- Septic tanks, effluent discharged into Feather River.
City of Stockton	- Imhoff tanks, purifying sewage for discharge into San Joaquin River.

In the present study I have been furnished with a copy of a report made by Mr. R. L. Vaughn, a reliable and experienced Civil Engineer under date of August 12, 1931, containing detailed studies made of the possibilities of reclaiming for Agricultural purposes the sewage of Oakland, Berkeley and San Jose.

COPY

QUANTITY AVAILABLE

The amount of water available from any sewage system is limited and generally is less than the domestic supply furnished the same community, particularly in the summer time or during the Santa Clara Valley irrigation season. In the Santa Clara Valley there has been a widespread failure to appreciate how small is the domestic water consumption in comparison with agricultural use. In California, as a whole, agricultural use of water is ten to twenty times as great as domestic consumption, and about the same ration applies in the Santa Clara Valley. One hundred gallons per capita is roughly about the average amount of water supplied to the city dwellers. If there were 100,000 city dwellers in the Santa Clara Valley Water Conservation District, at this rate they would take ten million gallons per day, but this is only 31 acre feet per day and if kept up steadily at this rate for a year would be only 11,315 acre feet or about 1/12 of the amount required for ultimate irrigation service in the district.

The dry weather flow of sewage in San Jose is about five million gallons per day, except during the canning season when it rises to about 7-1/2 million gallons per day. This is between the approximate limits of 8 and 12 cu. ft. per sec. or roughly sufficient to give a six inch irrigation to 15 to 25 acres per day of 24 hrs.

Mr. Vaughn in his studies concludes:-

"If the orchardists were properly educated in the economical use of water this flow would adequately serve at least 3,000 acres. They are now in such desperate shape as regards water that they should take kindly to education in this respect.

Santa Clara Valley contains some of the finest and most valuable orchards in the State. At present it is entirely dependent upon ground water for irrigation. Conditions are precarious in the extreme, the ground-water level now being well over two hundred feet below sea level. Of course, this means that salt water will reach the wells sooner or later and infact salt water is steadily invading the district and many of the best orchards are in serious danger.

The Santa Clara Valley Water Conservation District was organized and has been functioning for several years. It was granted enlarged powers by the last legislature. Up to the present time the principal efforts of the District have been directed towards the conservation of flood waters by spreading them over suitable gravel beds and thus replenishing the underground supply. Some beneficial

results have been obtained and undoubtedly the money has been well spent. However, the intensive development of the valley is continuing year by year bringing steadily increasing drafts upon the ground-water, which has now been so badly depleted that it is doubtful if even a prolonged series of very wet years could do more than temporarily delay the inevitable time when the supply will be ruined by salt water. The proposition is a very simple one, more water is being taken out of the ground than nature is putting back.

The District has the legal right to enter into an arrangement with the City of San Jose to take all its sewage and reclaim it. This was granted by the last Legislature. On the other hand, at the time the City obtained rights-of-way for its out-fall sewer, the land owners were given the right to take sewage for irrigation use and they have actually been doing so to a considerable extent. This use of raw sewage in the orchards has been regarded with grave misgivings by the State Board of Health and the landowners have been notified that unsanitary conditions cannot be permitted. As yet no other action has been taken.

These landowners may have acquired a right to this sewage which is superior to the right of the District."

The above quotations appear to sum up the situation very well.

A detailed estimate of the cost of a sewage reclamation plant indicates a probable cost for water suitable for unrestricted agricultural use of about 4.42¢ per 1,000 gallons or @14.45 per acre ft.

CONCLUSIONS

It is physically feasible to treat the San Jose sewage so as to produce water entirely suitable for irrigation use. The cost would be between ten and fifteen dollars per acre foot. If the entire amount of the San Jose sewage during the irrigation season could be treated,

sufficient water could be produced to give full irrigation requirements for not exceeding three thousand to five thousand acres.

The total water supply used for domestic and municipal purposes in the Santa Clara Valley Water Conservation District is not over 10% of the total requirements of the district and the salvage of all of the sewage waste from the city obviously would be a still smaller portion of the total requirements.

Respectfully submitted,

Fred A. Elliott

Chief Engineer,
SANTA CLARA VALLEY WATER CONSERVATION DIST.

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